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Blushing May Signify Guilt: Revealing Effects of Blushing in Ambiguous Social Situations¹

Peter J. de Jong,^{2,5} Madelon L. Peters,³ and David De Cremer⁴

Although blushing after a social infraction can function as a remedial gesture, people generally consider blushing as an undesirable response. To address this apparent inconsistency, we tested the idea that blushing has remedial properties after clear-cut antecedent behaviors, but can undermine the actor's image in ambiguous situations. In Experiment 1, participants (N = 49) read vignettes referring to prototypical mishaps, transgressions, and ambiguous situations. In Experiment 2 (N = 58), we specifically varied the actor's intentionality while keeping the actor's behavior constant. In support of its alleged face-saving properties, blushing had remedial effects after obvious mishaps and voluntary transgressions. However, in ambiguous social situations and after transgressions that are ambiguous with respect to the actor's intentionality, blushing undermined the actor's trustworthiness.

KEY WORDS: blushing; trustworthiness; guilt; appeasement; embarrassment.

There is increasing evidence that displays of shame and embarrassment have face-saving qualities. Publicly conveying embarrassment or shame would signify the actor's recognition that she/he has committed a social or moral infraction and sincerely regrets it (e.g., Keltner & Buswell, 1997; Semin & Manstead, 1982). In

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its turn, this submissive nonverbal apology may mitigate the negative social impression and evoke reconciliation-related behavior in the observers (e.g., Tangney, Miller, Flicker, & Barlow, 1996). In support of the implied instrumental value of displaying shame or embarrassment, it has been shown that people who have suffered a self-presentational predicament were motivated to convey their emotional state in order to repair their public images (Leary, Landel, & Patton, 1996; Experiment 2).

Because blushing is a salient concomitant of both shame and embarrassment (e.g., Shields, Mallory, & Simon, 1990), several authors have argued that blushing may share appeasement-related properties with other expressions of embarrassment and shame (e.g., Cutlip & Leary, 1993). It has even been speculated that blushing has relatively strong remedial effects (de Waal, 1995), because in contrast to most verbal and nonverbal expressions of shame and embarrassment (e.g., posture, facial expression, casting down eyes, gazing away), blushing cannot be intentionally elicited. This characteristic of the blush prevents blushing from being instrumentally used (for instance when it would be efficient to pretend shame or embarrassment), which, in turn, may serve to stress the actor's sincerity in displaying shame or embarrassment (Castelfranchi & Poggi, 1990).

In a first attempt to empirically document the idea that social blushing, indeed, serves a remedial function, we presented participants with a series of vignettes which described incidents that took place in a shop (cf. Semin & Manstead, 1982). In line with the idea that blushing serves as a remedial gesture, participants rated the blushing actors much more favorably on personality dimensions that are related to trustworthiness than their nonblushing counterparts (de Jong, 1999; Experiment 1 and 2). These remedial effects of blushing were even more pronounced than those of motoric signs of shame (e.g., glancing around shamefully), perhaps because typically a blush cannot be voluntarily produced.

To extend these findings to more realistic, in vivo circumstances, we recently carried out a study that was designed to test whether similar remedial effects can also be found in the context of real-time interactions (de Jong, Peters, De Cremer, & Vranken, 2002). More specifically, we investigated the functional properties of blushing in the context of a prisoner's dilemma game (PDG). In a PDG each individual's payoff is dependent on the choices (defect vs. cooperate) both participants make throughout the task. In a typical "game" one's personal outcomes are best served by defecting, whereas maximizing the *joint* outcomes requires that both participants cooperate (thus cooperation is the normative choice). Participants in our PDG study were individuals sharing the important normative social goal of cooperation (i.e., prosocials; see for a review van Lange, 2000). Yet, for each pair, one individual was instructed to select the nonhabitual cheat-option on a predefined target trial. As expected (e.g., Castelfranchi & Poggi, 1990), the "cheaters" showed a strong blush on the target trial (physiologically and subjectively). Yet, unexpectedly, there was a *negative* relationship between the observed blush intensity and

the trustworthiness attributed to the defectors. In other words, blushing was found to have adverse rather than remedial effects.

Several testable explanations can be put forward to explain this apparent inconsistency. First, the vignette study concerned a mild mishap, whereas defecting in the PDG study was primed as being an immoral act. Hence, one explanation for the discrepancy between the two studies might be that blushing is only effective in modifying people's judgments in the context of mild infractions. Relatedly, the mishaps that were described in the vignettes occurred seemingly involuntarily, whereas selecting the defect option in a PDG is obviously a voluntary act. It seems reasonable to argue that under such circumstances it requires more than nonverbal communication to restore what one has done wrong (cf. Keltner, 1995). Third, in all previous studies showing a remedial effect of displays of embarrassment (e.g., de Jong, 1999; Semin & Manstead, 1982) or shame (e.g., Keltner, Young, & Buswell, 1997), the participants who observed and evaluated the actors after a social/moral infraction were *not directly* involved in the pertinent social interaction. That is, the actors themselves or a third party were the "victims" of the transgression, but never the evaluating participant (as was the case in the PDG study). Because hedonic relevance of the actor's behavior leads an observer to make internal rather than external attributions for this behavior (e.g., Jones & Davis, 1965), it might well be that being the victim of a transgression may give rise to the interpretation that the transgression reflects an habitual tendency of the actor, rather than a coincidence of situational factors. When a transgression is predominantly attributed to the actor's dispositions, this may undermine the otherwise remedial properties of blushing.

Perhaps most importantly, it might be that the "victims" in the PDG study used the blush response of the defector to deduce and interpret the "cheater's" motive. Note that in contrast to previous studies, the transgression involved in the PDG study was ambiguous with respect to the perpetrators' intentionality. For example, selecting the "defect" option on the target trial could be interpreted as innocent "playful behavior" (e.g., to prevent the experiment from getting boring), but also as an intentional (and thus unfair) act to maximize the outcomes for the self at the expense of the interdependent others. Unexpected events, such as the interdependent other's choice to defect, are among the antecedent cues that elicit causal search (Weiner, 1985). In their causal interpretation of the transgressor's behavior, the "victims" are likely to overemphasize the role of the actor's negative dispositions and to underemphasize the influence of situational factors (fundamental attribution error; Ross, 1977). Because of the pervasive logical fallacy of "affirmation of the consequent" (Evans, Newstead, & Byrne, 1993) ('if a person does something undesirable, then that person will blush; the person blushes, thus the person must have done something undesirable'; cf. Arntz, Rauner, & van den Hout, 1995), the observers might have interpreted blushing in the present context (i.e., in the absence of a clear-cut antecedent of the blush response) as a further

confirmation of the undesirable (immoral) motives behind the actor's behavior. In other words, the blush may have led observers to interpret the ambiguous behavior as reflecting an intentional (and thus unfair) act, rather than as innocent playing around, and the higher levels of attributed intentionality are likely to have resulted in less "social affection" (Semin, 1982). Following this line of reasoning, blushing in ambiguous situations has revealing rather than appeasing effects.

If so, this implies that the communicative properties of blushing are *context-dependent*. In case of unambiguous antecedent behaviors, displaying a blush would signify the individual's recognition that she/he has committed a social/moral infraction and sincerely regrets it (cf. Goffman, 1967), whereas in the absence of such unambiguous antecedent behaviors, blushing may be typically interpreted as revealing the true (defecting/immoral) nature of these antecedent behaviors (cf. "true innocence doesn't need a blush"). In other words, in the absence of a clear-cut mishap/transgression, observers may (erroneously) interpret the blush (and other signs of embarrassment or shame) as evidence that the blusher has behaved in an inappropriate manner. Accordingly, in the context of an obvious mishap or transgression, blushing will have face-saving qualities, whereas in the absence of such an obvious predicament, blushing will have the opposite effect.

EXPERIMENT 1

As a first step to test the validity of the hypothesis that the communicative value of the blush is context-dependent, we presented participants with a series of vignettes some of which referred to apparently involuntary mishaps, some to more serious, seemingly voluntary moral transgressions, and some to ambiguous situations that could be interpreted as a transgression, but also as a coincidence. Following the foregoing analysis, we anticipated that in the context of ambiguous social situations blushing would typically have revealing rather than appeasing effects, whereas in the context of clear-cut mishaps or voluntary transgressions we expected blushing typically to serve a remedial function (e.g., de Jong, 1999). As a subsidiary issue we also explored the influence of the observers' perspective (victim vs. by-stander) on the observers' evaluation of the actor. More specifically, we investigated whether being the victim of a transgression of some kind (i.e., hedonic relevance) acts to undermine the remedial properties of the blush.

Method

Participants

Participants were 49 female undergraduates from Maastricht University. They participated on a voluntary basis. In return for their participation they received a small gift (in natura). Mean age was 19.1 years (range = 18–27 years).

Materials and Measures

We used a paper and pencil task which consisted of a series of vignettes, each followed by a number of 100-mm visual analogue scales (VASs). There were three categories of vignettes. One category consisted of vignettes describing clear-cut mishaps; one consisted of obvious transgressions; and one consisted of vignettes describing ambiguous situations that could be interpreted as an intentional transgression but not necessarily so (see Appendix A for examples). In half of the vignettes, the participants were described as being the victim of the mishap/transgression, whereas in the other half of the vignettes participants observed the incident, in which another person was the victim. Finally, half of the vignettes explicitly mentioned that the actors displayed a blush response following the incident, whereas in the other half of the vignettes this particular information was omitted. Thus the design was a 3 Category (mishap vs. transgression vs. ambiguous) \times 2 Victim (self vs. other) \times 2 Actor's Response (blush vs. no blush) within subjects design, allowing for 12 different types of vignettes.

To cancel out the influence of a particular context, we constructed four different scripts for each of the three distinct categories of vignettes. These different scripts were systematically varied across the ($2 \times 2 = 4$) different types of vignettes within each category. Participants were presented with a series of 12 vignettes (one of each type); for each series a particular context appeared only once. To minimize the influence of carryover effects, the order of vignettes was randomized for each participant. The vignettes were printed on separate sheets. On the cover page, participants were instructed that this experiment concerned an investigation into the appraisal of events and they were asked to identify themselves with the description as much as possible. It was stressed that there were no right or wrong answers and that only their personal judgment counted. Following this instruction, an explanation was given how to use the VASs. Participants were tested individually.

Each vignette was followed by five VASs on which the participants could indicate the probability that the transgression/mishap was the result of an intentional act (0% = 0, 100% = 100), the seriousness of the incident (*not serious at all* = 0, *very serious* = 100), and how they evaluated the actor with regard to the following personality dimensions (cf. de Jong, 1999): reliability (*not at all reliable* = 0, *very reliable* = 100), sociability (*not at all social* = 0, *very social* = 100), and likeability (*very unlikeable* = 0, *very likeable* = 100).

Results

Attributed Intentionality

Supporting the validity of the present experimental setup, a 3 Category (mishap vs. transgression vs. ambiguous) \times 2 Victim (self vs. other) \times 2 Actor's

Response (blush vs. no blush) analysis of variance (ANOVA) revealed a main effect of category, $F(2, 44) = 279.1$, $p < .0001$. In line with the (intended) experimental manipulation, participants' probability of intentionality ratings were lowest with respect to the vignettes describing seemingly involuntary mishaps, highest for the vignettes describing obviously voluntary transgressions, and intermediate for vignettes describing ambiguous situations (that could be interpreted as an intentional transgression but not necessarily so). This effect was independent of the primed perspective (victim or observer), $F(2, 44) = 1.81$, $p = .17$. In addition, there was no main effect of the actor's response (blush vs. no blush), $F(2, 44) = 2.16$, $p = .15$. Yet, in line with the predictions, there was a significant category by actor's response interaction, $F(2, 44) = 11.2$, $p < .0001$. This interaction effect was independent of the primed perspective (victim vs. observer), $F(2, 44) < 1$. Subsequent analyses indicated that, as predicted, in the context of ambiguous situations, the actor's blush response inflated the attributed intentionality ratings, $F(1, 48) = 8.1$, $p < .001$, whereas the actor's blush response had no influence on the attributed intentionality ratings in the context of a seemingly involuntary mishap, $F(1, 48) < 1$, or an obviously voluntary transgression, $F(1, 48) = 1.6$, $p > .2$ (see Fig. 1).

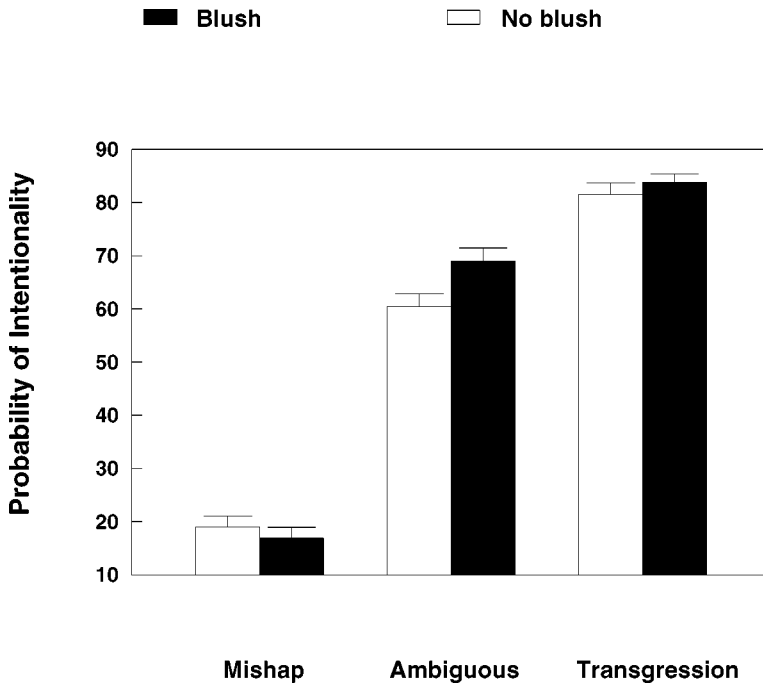


Fig. 1. Attributed intentionality as a function of the actor's response (blush vs. no blush) for each of the three different types of incidents (mishap, ambiguous, transgression).

Seriousness

A 3 Category (mishap vs. transgression vs. ambiguous) \times 2 Victim (self vs. other) \times 2 Actor's Response (blush vs. no blush) ANOVA revealed a main effect of category, $F(2, 44) = 24.5, p < .001$. Subsequent analyses indicated that the seriousness ratings were significantly lower for the seemingly involuntary mishaps than for the ambiguous situations, $F(1, 48) = 65.1, p < .001$, or obviously voluntary transgressions, $F(1, 48) = 32.1, p < .001$. Yet, the two latter categories did not differ significantly from each other in this respect, $F(1, 48) = 2.4, p > .10$. There was no main effect of the actor's (blush) response, $F(1, 45) < 1$. Yet, in line with the predictions, there was a significant category by response interaction, $F(2, 44) = 6.4, p < .01$. None of the other effects reached the conventional level of significance. Subsequent analyses indicated that within the ambiguous context the blush response inflated the seriousness ratings, $F(1, 48) = 6.1, p < .05$. In contrast, the blush response attenuated the rated seriousness of the incident in the context of an obviously voluntary transgression, $F(1, 48) = 6.8, p = .01$. Meanwhile, the blush response had no significant effect in the context of a seemingly involuntary mishap, $F(1, 48) = 1.1, p > .20$ (see also Fig. 2).

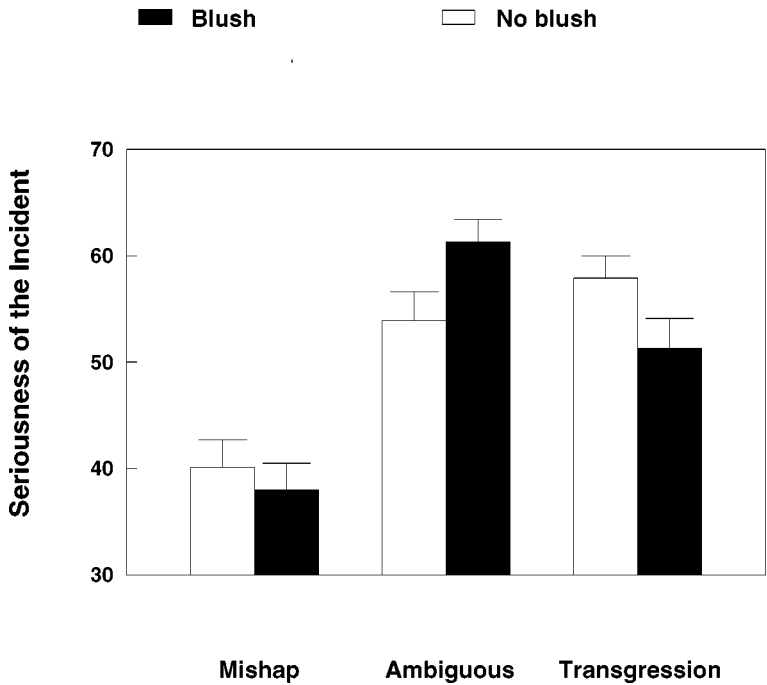


Fig. 2. Levels of attributed seriousness for each of the three different types of incidents as a function of the actor's response (blush vs. no blush).

To test the hypothesis that the influence of context is mediated by intentionality we carried out a similar ANOVA while controlling for perceived intentionality. Therefore, we regressed the intentionality ratings on the seriousness ratings. To assess the necessary regression coefficient we carried out six separate regression analyses (one for each of the 3 Category \times 2 Response conditions), with the seriousness rating being the outcome variable and the attributed intentionality rating being the predictor variable. For each of the six conditions, the product of the averaged B and the original intentionality ratings ($B \times I$) was subtracted from the corresponding seriousness ratings: Regressed Seriousness rating = original seriousness rating $- B \times I$ (we averaged the six [not standardized] B regression coefficients, because the mean of these six regression coefficients can be considered as the best approximation of the "true" regression coefficient). Finally, we subjected this newly computed variable (i.e., residual + intercept) to a 3 Category (mishap vs. transgression vs. ambiguous) \times 2 Actor's Response (blush vs. no blush) ANOVA. In support of the mediational hypothesis, the category by response interaction was no longer significant, $F(2, 47) = 1.85$, $p = .17$.

Trait Measures

A 3 Category (mishap vs. transgression vs. ambiguous) \times 2 Victim (self vs. other) \times 2 Actor's Response (blush vs. no blush) multivariate analysis of variance (MANOVA) revealed a main effect of category, $F(2, 44) = 75.3$, $p < .001$. Subsequent paired comparisons indicated that actors were evaluated more positively after a seemingly involuntary mishap than after a voluntary transgression, $F(1, 48) = 182.8$, $p < .001$, or in the context of an ambiguous situation, $F(1, 48) = 114.9$, $p < .001$, whereas actors in the latter situations were evaluated more positively than those in the context of a voluntary transgression, $F(1, 48) = 12.3$, $p < .001$.

There was no main effect of primed perspective, $F(1, 45) < 1$ or of the actor's response, $F(1, 45) = 2.3$, $p > .10$. Most important for the current context, there was a significant category by actor's (blush) response interaction, $F(2, 44) = 5.7$, $p < .01$, which appeared independent of the primed perspective, $F(2, 44) < 1$. No other effects reached the conventional level of significance. Subsequent analyses indicated that the blush response did not affect the attributed trait characteristics of the actors in the ambiguous context, $F(1, 48) = 1.2$, $p > .20$. Yet, after the seemingly involuntary mishap as well as after the obviously voluntary mishap, blushing resulted in a more favorable evaluation of the actors' trait characteristics, $F(1, 48) = 9.2$, $p < .001$ and $F(1, 48) = 8.3$, $p < .001$, respectively (see also Fig. 3).

As for the seriousness ratings, we carried out an additional ANOVA while controlling for perceived intentionality. This was done to test the hypothesis that the influence of context is mediated by attributed intentionality. Therefore, we

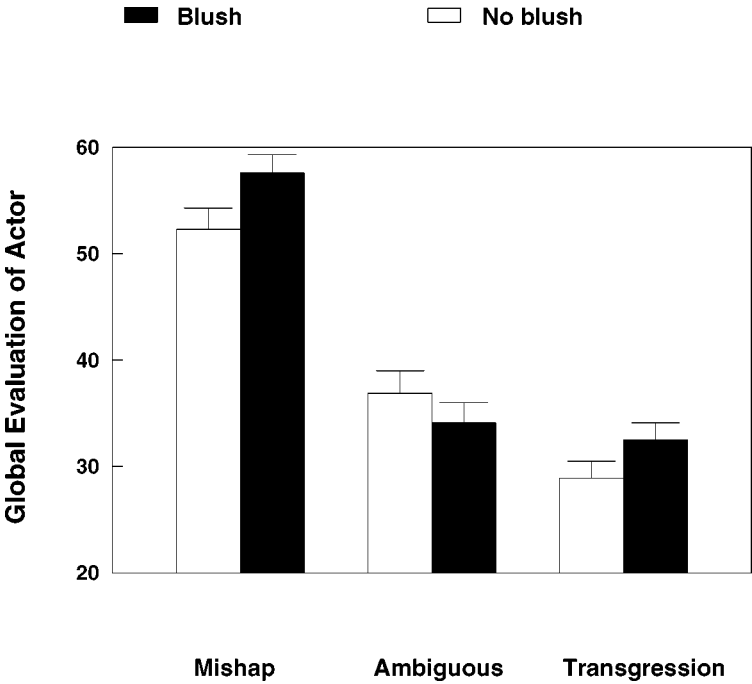


Fig. 3. Global evaluation of the actor in the context of each of the three different types of incidents as a function of the actor’s response (blush vs. no blush).

regressed the intentionality ratings on the corresponding ratings of the attributed trait characteristics and subjected this newly computed variable to a 3 Category (mishap vs. transgression vs. ambiguous) \times 2 Actor’s Response (blush vs. no blush). In support of the mediational hypothesis, the category by response interaction was no longer significant, $F(2, 47) = 1.39, p = .26$.

Discussion

The major results can be summarized as follows: (i) Typically in ambiguous situations the actor’s blush response inflated the level of intentionality that was attributed to the actors; (ii) specifically in the context of a clear-cut mishap or obvious moral transgression, blushing attenuated the negative impression of the actor; (iii) in the context of a moral transgression, the incident itself was perceived as less serious when the actor displayed a blush, whereas the opposite was true within the context of an ambiguous situation that could be interpreted as a transgression; (iv) all of the effects were independent of the observers’ perspective (i.e., by-stander vs. “victim”).

The present findings clearly corroborate the idea that under certain circumstances blushing may serve a remedial function (e.g., Leary, Britt, Cutlip, & Templeton, 1992). Replicating previous research (de Jong, 1999), the present results showed that blushing has favorable effects in the context of a seemingly involuntary mishap (at least at the symbolic level). The present study extends previous research by showing that the remedial properties of the blush are independent of the hedonic relevance of the outcome, and not restricted to the context of seemingly involuntary mishaps, but may also be evident in the context of more serious and apparently voluntary moral transgressions. That is, although deviant behaviors such as damaging someone else's bicycle reflect a clear-cut voluntary socially unacceptable act, the knowledge that the actor showed a blush was still found to attenuate the negative impression of the actor, as well as favorably influencing the attributed seriousness of the incident. One explanation for these remedial effects of the blush might be that the observers interpreted the blush as a sign of sincere remorse (e.g., Castelfranchi & Poggi, 1990). It has been shown that expressed remorse positively affects the observers' expectancies regarding future transgressions of the actor (Gold & Weiner, 2000), which, in turn, is likely to positively influence the social evaluation of the act as well of the actor.

Similar appeasing effects of blushing were completely absent in the context of more ambiguous social situations. That is, in the absence of a clear-cut predicament, blushing did not result in a more positive evaluation of the actor as was found in the context of a mishap or a moral transgression. If anything, blushing tended to further undermine rather than to sustain the actors' trustworthiness in the absence of straightforward antecedent behavior. Meanwhile, the incident itself was judged as being considerably more serious when the actor displayed a blush. Thus, as predicted blushing had a clear-cut undesirable effect in the context of ambiguous social situations with respect to the attributed seriousness. This effect of the blush is probably due to the higher levels of intentionality that were attributed to the blushing individual in this category of situations (cf. Semin, 1982). In line with this, the differences between the ambiguous and nonambiguous situations with respect to both the social affection and the attributed seriousness of the incident were no longer significant when controlling for perceived intentionality. Thus it appears that in the ambiguous situations, displaying a blush may substantiate observers' lingering suspicions that the blusher has indeed behaved in a socially inappropriate manner.

EXPERIMENT 2

Although the pattern of results of Experiment 1 clearly showed that the effects of the blush are context dependent, it should be acknowledged that the present experiment relied on prototypical examples of the target situations. As a result, the categories of situations not only varied as a function of the degree of ambiguity

with respect to the probability of intentionality; the categories of situations also varied with respect to both the actions performed and the potential consequences of these actions. We therefore cannot rule out the possibility that the observed effects of blushing on perceptions of the actor's personality and on the evaluations of the seriousness of the actions arose from unintended variation across the three conditions (mishap, ambiguous, transgression). Therefore, we designed a second experiment to more definitely test whether, indeed, the apparent level of intentionality plays a critical role with respect to the differential communicative effects of the blush. In this follow-up study, we kept the actors' behavior as well as the consequences of their behavior constant over conditions, and only manipulated the apparent intentionality of the actors' behavior.

As an additional issue, Experiment 2 explored whether the blush influences the impression of the actor's moral sense. That is, several authors have argued that blushing might be seen as a sign of moral integrity (e.g., Castelfranchi & Poggi, 1990; de Waal, 1995). Accordingly, previous findings in the context of a seemingly involuntary transgression indeed showed that observers attributed a stronger moral sense to blushing actors than to their nonblushing counterparts (de Jong, 1999; Experiment 2). In the present experiment we tested whether typically in the context of transgressions that are ambiguous with respect to the actor's intentionality, blushing undermines the impression of the actor's moral sense, whereas we anticipated that in both the obviously intentional and obviously nonintentional contexts blushing would result in a relatively positive impression of the actor's moral sense.

Method

Participants

Fifty-four women and five men participated on a voluntary basis. They were an unselected, heterogeneous community sample recruited following a "snow ball" procedure (friends asking their friends, family members, or colleagues, etc.). Mean age was 41.6 years (range = 17–76 years). Mean level of education was 7.3 on a scale ranging from 1 (*only primary education*) to 11 (*university degree*).

Materials and Measures

We used a similar paper and pencil task as was used in Experiment 1. Again the task consisted of a series of vignettes, each followed by a number of 100-mm VASs. There were three categories of vignettes. For all categories of vignettes, the actor violated a sociomoral rule. The categories of situations differed only with respect to the apparent intentionality of the violation. In the "nonintentional" category we added information like "being buried in thoughts [the person did not

stamp his ticket before entering the train]" in an attempt to lower the plausibility that the transgression (e.g., not stamping the train ticket) reflects an intentional act. In the "intentional" category, we added, information like "The person is aware of the fact that train tickets are almost never checked in this section" in an attempt to suggest that this information in fact motivated the actor to enter the train without stamping the ticket. Thus in both the intentional and the nonintentional conditions we added information to disambiguate the actor's intention. In the "ambiguous" category no such information was added leaving the transgression ambiguous with respect to the actor's intentionality (see Appendix B for examples). Half of the vignettes explicitly mentioned that the actors displayed a blush response upon being caught (e.g., by the ticket collector), whereas in the other half of the vignettes this particular information was omitted. Thus the design was a 3 Category (nonintentional vs. ambiguous vs. intentional) \times 2 Actor's Response (blush vs. no blush) within subjects design, allowing for six different types of vignettes.

To cancel out the influence of a particular context, we constructed six different basic scripts describing a particular rule violation (e.g., entering the train without stamping the ticket; leaving a shop without paying for a particular item). These different scripts were systematically varied across the (3 \times 2) different types of vignettes within each category. Participants were presented with a series of six vignettes (one of each type); for each series a particular context appeared only once. To minimize the influence of carry-over effects, the order of vignettes was randomized for each participant. The vignettes were printed on separate sheets. On the cover page participants were instructed that this experiment concerned an investigation into the appraisal of events and they were asked to identify themselves with the description as much as possible. It was stressed that there were no right or wrong answers and that only their personal judgment counted. Following this instruction, an explanation was given on how to use the VASs. Participants were tested individually.

Each vignette was followed by six VASs on which the participants could indicate the probability that the transgression/mishap was the result of an intentional act (0% = 0, 100% = 100), the impression of the actor's moral sense (*very weak* = 0, *very strong* = 100), the seriousness of the incident (*not serious at all* = 0, *very serious* = 100), and how they evaluated the actor with regard to the following personality dimensions: reliability (*not at all reliable* = 0, *very reliable* = 100), sociability (*not at all social* = 0, *very social* = 100), and likeability (*very unlikeable* = 0, *very likeable* = 100).

Results

Attributed Intentionality

Supporting the validity of the present experimental setup, a 3 Category (nonintentional vs. ambiguous vs. intentional) \times 2 Actor's Response (blush vs. no

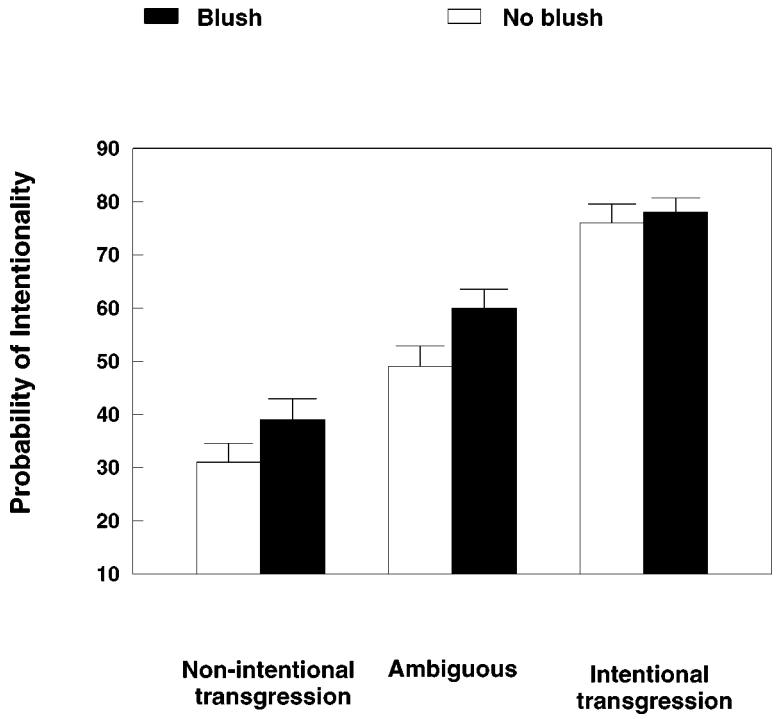


Fig. 4. Attributed intentionality as a function of the actor’s response (blush vs. no blush) for each of the three different types of incidents (nonintentional, ambiguous, intentional transgression).

blush) ANOVA revealed a main effect of category, $F(2, 57) = 56.71, p < .0001$. In line with the (intended) experimental manipulation, participants’ probability of intentionality ratings were lowest with respect to the vignettes describing the “nonintentional” transgressions, highest for the vignettes describing apparently intentional transgressions, and intermediate for vignettes describing transgression that were left ambiguous with respect to the actor’s intention (see Fig. 4). In addition, there was a significant main effect of the actor’s response, $F(1, 58) = 7.63, p < .05$, indicating that, overall, blushing resulted in higher levels of intentionality attributed to the actor. The category by actor’s response interaction did not attain significance, $F(2, 57) = 1.3, p = .23$, indicating that there were no significant differential effects of the blush across the three categories of transgressions in this respect. Meanwhile, the pattern of results with respect to the ambiguous situation and the apparently intentional transgression were as predicted and very similar to those of Experiment 1 (see Fig. 4). However, in contrast to Experiment 1, the pattern of results with respect to the “nonintentional” transgression suggest that, if anything, blushing inflated (rather than attenuated) the attributed intentionality in the present “nonintentional” category of situations.

Seriousness

A 3 Category (nonintentional vs. ambiguous vs. intentional) \times 2 Actor's Response (blush vs. no blush) ANOVA revealed a main effect of category, $F(2, 57) = 31.5$, $p < .001$. In line with the results of Experiment 1, the seriousness ratings were lowest with respect to the vignettes describing the "nonintentional" transgressions, highest for the vignettes describing apparently intentional transgressions, and intermediate for vignettes describing transgressions that were left ambiguous with respect to the actor's intention (see Fig. 5). There was no main effect of the actor's (blush) response, $F(1, 58) = 2.7$, $p > .10$. Yet, in line with the predictions, there was a significant category by response interaction, $F(2, 57) = 3.6$, $p < .05$. Replicating the results of Experiment 1, subsequent analyses indicated that within the ambiguous context the blush response inflated the seriousness ratings, $t(58) = 2.7$, $p < .01$, whereas the blush response tended to attenuate the rated seriousness of the incident in the context of an intentional transgression, $t(58) = -1.2$, $p = .11$. However, in contrast to Experiment 1, the blush response

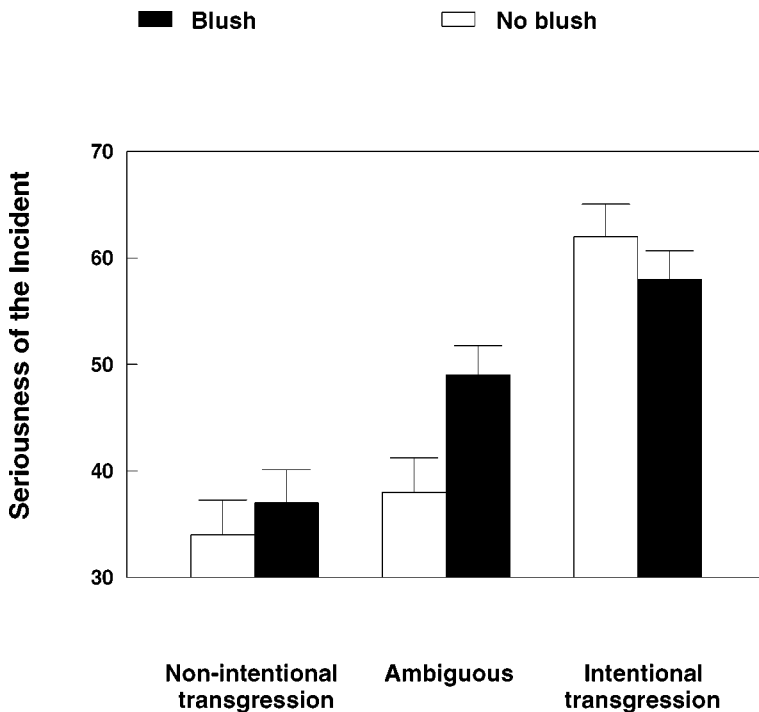


Fig. 5. Levels of attributed seriousness for each of the three different types of incidents as a function of the actor's response (blush vs. no blush).

had no significant effect in the context of a seemingly nonintentional transgression, $t(58) = 0.9, p > .20$ (see also Fig. 5).

Trait Measures

A 3 Category (nonintentional vs. ambiguous vs. intentional) \times 2 Actor's Response (blush vs. no blush) MANOVA revealed a main effect of category, $F(2, 58) = 33.5, p < .001$. In line with the results of Experiment 1, the actors' evaluations were most positive in the context of "nonintentional" transgressions, most negative for the vignettes describing apparently intentional transgressions, and intermediate for vignettes describing transgression that were left ambiguous with respect to the actor's intention (see Fig. 6). There was no main effect of the actor's response, $F(1, 58) < 1$. Although the pattern was in the predicted direction, the category by actor's (blush) response interaction did not attain significance, $F(2, 57) = 1.70, p = .20$ (see also Fig. 6).

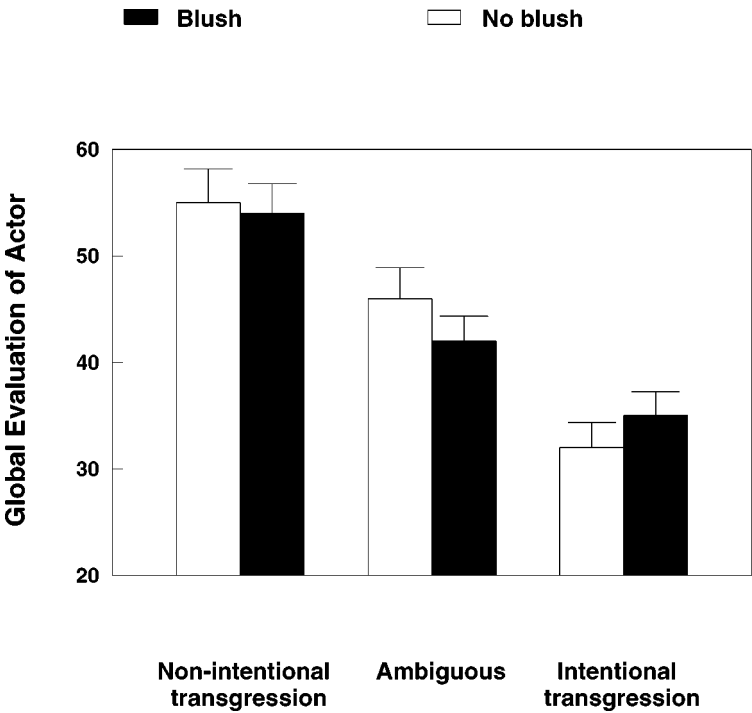


Fig. 6. Global evaluation of the actor in the context of each of the three different types of incidents as a function of the actor's response (blush vs. no blush).

Moral Sense

A 3 Category (nonintentional vs. ambiguous vs. intentional) \times 2 Actor's Response (blush vs. no blush) ANOVA revealed a main effect of category, $F(2, 57) = 21.7$, $p < .001$. In accordance with the experimental manipulation, the attributed moral sense was lowest with respect to the vignettes describing the "intentional" transgressions, highest for the vignettes describing apparently nonintentional transgressions, and intermediate for vignettes describing transgressions that were left ambiguous with respect to the actor's intention (see Fig. 7). There was no main effect of actor's response, $F(1, 58) = 0.5$. Yet, in line with the predictions there was a significant category by response interaction, $F(2, 57) = 3.6$, $p < .05$. Subsequent analyses indicated that within the ambiguous context the blush response significantly lowered the moral sense attributed to the actor, $t(58) = -1.85$, $p < .05$, whereas the blush tended to inflate the impression of the actor's moral sense in the context of an apparently intentional transgression, $t(58) = 1.62$, $p = .05$. If anything, the blush lowered the attributed moral sense in the nonintentional condition,

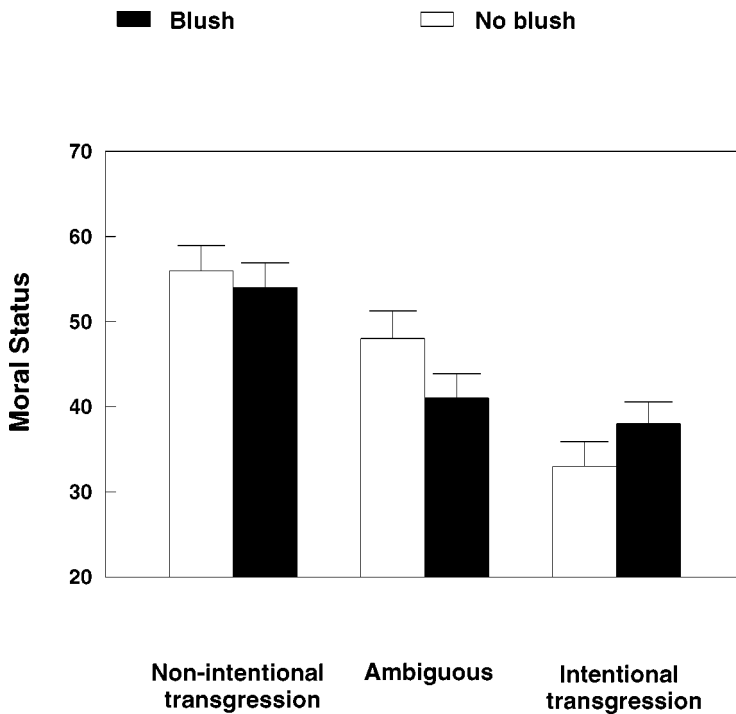


Fig. 7. Level of attributed moral sense for each of the three different types of incidents as a function of the actor's response (blush vs. no blush).

yet this effect did not approach the conventional level of significance, $t(58) < 1$ (see also Fig. 7).

Discussion

The major results can be summarized as follows: (i) Particularly in the context of a transgression that was ambiguous with respect to the actor's intentionality, the actor's blush response inflated the level of intentionality that was attributed to the actor; (ii) in the context of a transgression that was ambiguous with respect to the actor's intentionality, the incident was perceived as more serious when the actor displayed a blush, whereas the opposite was true within the context of an apparently intentional transgression; (iii) in the context of an apparent intentional transgression, blushing tended to attenuate the actors' negative impression, whereas the opposite was true for the transgression that was ambiguous with respect to the actor's intentionality; (iv) similarly, in the context of an apparently intentional transgression, participants attributed a relatively strong moral sense to the blushing actor, whereas the opposite was true for the ambiguous context; (v) in contrast to previous studies (including Experiment 1), no significant effects of the blush emerged in the context of the "nonintentional" transgression.

The major aim of Experiment 2 was to examine whether the context-dependent communicative properties of the blush are due to the differential levels of ambiguity with respect to the probability of intentionality that are characteristic for the various contexts in which people tend to blush. In support of the idea that perceived intentionality plays a crucial role in the communicative properties of the blush, the pattern of findings with respect to the intentional and ambiguous contexts were virtually identical to those of Experiment 1. Thus even when the actor's behavior and its consequences were held constant, the blush was found to have context-dependent communicative properties. That is, typically in the context that was ambiguous with respect to the actor's intentionality, blushing had unfavorable revealing effects, whereas the blush had a relatively favorable influence when the transgression was apparently intentional.

The present pattern of findings not only corroborates the idea that perceived intentionality plays a crucial role in the communicative effects of the blush, it also replicates the findings of Experiment 1, indicating that blushing has remedial properties in the context of apparently voluntary/intentional transgressions. In addition, it extends the results of Experiment 1 by showing that the revealing properties of the blush are not restricted to ambiguous situations that could be possibly interpreted as a transgression, but also to situations in which people clearly violate sociomoral rules that are ambiguous with respect to the actor's intentionality. In other words, blushing may not only signify to the observer that the blusher has indeed done or thought something undesirable, but may also reveal the blusher's intentionality when obviously violating a sociomoral rule.

Some comments are in order with respect to the absence of any favorable effects of the blush in the “nonintentional” condition. That is, in contrast to previous studies (including Experiment 1), the blush did not attenuate the actor’s negative impression, nor did it favorably influence the attributed seriousness of the transgression. In fact, the influence of the blush was very similar to the undesirable effects of the blush in the ambiguous condition (but weaker and non-significant). Perhaps the most parsimonious explanation for this unexpected finding is that the level of ambiguity in the nonintentional condition was still too high in comparison with the mishap condition to elicit the favorable effects of the blush, but too low to fully elicit the revealing effects that are evident in the ambiguous condition. In line with this, the intentionality ratings of the nonintentional condition in Experiment 2 were substantially higher than those reported for the mishap conditions of Experiment 1. Perhaps the fact that in the present vignettes the actor potentially benefits from the transgression (e.g., traveling by train without costs) fueled the suspicion that some intentionality played still a role in the actor’s transgression. This might explain the relatively high intentionality ratings despite our attempt to disambiguate the situation by adding expressions as “*buried in thoughts* the person jumped on the train without stamping the ticket.”

Finally, the present results sustain the idea that the blush influences the impression of the actor’s moral sense (e.g., Castelfranchi & Poggi, 1990; de Waal, 1995). Similar to previous findings in the context of a prototypical mishap (de Jong, 1999; Experiment 2), Experiment 2 showed that in the context of an apparently intentional transgression, observers tended to attribute a stronger moral sense to blushing actors than to their nonblushing counterparts. In contrast to the favorable effects of the blush in the intentional context, the blush weakened rather than strengthened the impression of the actor’s morality in the context of transgressions that were ambiguous with respect to the actor’s intentionality. In contrast to previous work (de Jong, 1999; Experiment 2), the blush had no favorable effect on the impression of the actor’s moral sense within the nonintentional context. If anything, the effect was in the opposite direction and similar to the pattern that was evident in the ambiguous condition. As argued above, this might well be due to the fact that the nonintentional condition was still somewhat ambiguous with respect to the actor’s intentionality.

GENERAL DISCUSSION

The present findings corroborate the idea that under certain circumstances blushing may serve a remedial function (e.g., Leary et al., 1992). Replicating previous research (de Jong, 1999), the present results showed that blushing has favorable effects in the context of a seemingly involuntary mishap (at least at the symbolic level). The present study extends previous research by showing that

the remedial properties of the blush are independent of the hedonic relevance of the outcome. In addition, both experiments showed that the remedial effects are not restricted to the context of seemingly involuntary mishaps, but may also be evident in the context of more serious and apparently voluntary moral transgressions. That is, although deviant behaviors such as damaging someone else's bicycle, or entering a train without paying a ticket reflect clear-cut voluntary socially unacceptable acts, the knowledge that the actor showed a blush was still found to attenuate the negative impression of the actor, as well as to favorably influence the attributed seriousness of the incident.

The present results are silent with respect to the issue of how the blush response succeeded in eliciting these remedial effects in the presence of a clear-cut social infraction. A testable candidate would be that the blush response signified to the observer that the actor was at least disturbed by the transgression and as such apparently aware of the violated norm (cf. Goffman, 1967). Relatedly, it might be that observers interpreted the blush as a sign of sincere remorse (e.g., Castelfranchi & Poggi, 1990). This might have been taken as evidence that the present transgression did not reflect an habitual tendency and should, therefore, not be (entirely) attributed to negative dispositional characteristics of the actor; apparently also some (unfortunate) situational influences played a role here (e.g., de Jong, 1999; Experiment 2). In accordance with such an interpretation, the results of Experiment 2 showed that blushing prevents the decline of the moral sense that is attributed to the actor in the context of an apparently intentional transgression.

Similar remedial effects of blushing were absent in the context of more ambiguous social situations (Experiment 1), or violations of sociomoral rules that were ambiguous with respect to the actor's intentionality (Experiment 2). That is, in the absence of clear-cut predicaments or straightforward information with respect to the intentionality of a transgression, blushing did not result in a more positive evaluation of the actor as was found in the context of a mishap or a voluntary moral transgression. If anything, blushing tended to further undermine rather than to sustain the actors' trustworthiness and attributed moral sense in the absence of straightforward intentionality or obvious antecedent behavior.

Meanwhile, the incident itself was judged as being considerably more serious when the actor displayed a blush. Thus, as predicted blushing had a clear-cut undesirable effect in the context of ambiguous social situations with respect to the attributed seriousness. This effect of the blush is probably due to the higher levels of intentionality that were attributed to the blushing individual in the ambiguous contexts (cf., Semin, 1982). In line with this, Experiment 2 showed that typically in the context of ambiguous transgressions blushing had unfavorable revealing effects, also when the actors' behavior as well as the consequences of their behavior were kept constant, and only the level of ambiguity with respect to the actor's intentionality was varied over conditions.

Clearly, in ambiguous situations, people have no salient reference point to explain others' actions. As a consequence, dispositional inferences will be made, which reduce uncertainty about the other's intentions and actions. This is also in line with an attributional analysis suggesting that people have a strong tendency to engage in dispositional inferences when explaining one's actions (e.g., Ross, 1977). A consequence of this theoretical rationale is that such dispositional inference (e.g., on the basis of other's blushing) may be used to reduce uncertainty about the actor's intentions.

To the extent that people realize that concomitants of shame and embarrassment (such as blushing) signify to others that they have done or thought of something undesirable ("true innocence doesn't need a blush"), blushing in ambiguous situations is likely to be perceived as threatening to one's public image. Following from this, one may assume that under such circumstances individuals will be motivated to conceal their feelings of embarrassment from others (cf. Edelman, 1990). Indeed, being accountable enhances self-preservation (and self-enhancement) motives (Tetlock, 1992). However, although people may be successful in suppressing (or modifying) most of the other verbal and nonverbal concomitants of shame or embarrassment, it is not possible to suppress a blush.

Moreover, realizing that blushing (and other signs of shame and embarrassment) may signify to others that one has done or thought of something undesirable may well have unfortunate (and ironic) side effects (de Jong, 1998). That is, innocent people's fear of being negatively evaluated in the context of an ambiguous situation (i.e., a situation that could erroneously be interpreted as if they had behaved in a socially inappropriate manner) is likely to give rise to feelings of embarrassment or shame. In turn, these feelings may evoke a blush, which ironically promotes the generation of the undesirable and/or undeserved negative public image. Because of their fearful preoccupation with their public self-image (e.g., Rapee & Heimberg, 1997), these ironic effects may be expected to be especially pronounced in social phobic individuals (cf. Drummond, 2001).

All in all, the present pattern of findings sustains the idea that the functional properties of blushing are context dependent. In the case of clear-cut deviant behaviors, blushing has face-saving qualities, but in the context of more ambiguous social situations or situations that are ambiguous with respect to the actor's intentionality, blushing may serve a revealing rather than an appeasing function. Thus, by virtue of its involuntary nature, blushing may sometimes unwantedly signify that the blusher has done or thought something undesirable. Because in most social situations there is some degree of ambiguity with respect to the elicitors of an individual's blush response as well as the intentionality of individuals' behaviors, the "revealing" effects of blushing may well dominate its appeasing functions in real life. These characteristics of the blush may help to explain why people generally consider blushing as an undesirable response which they often try to stop or to conceal (Shields, Mallory, & Simon, 1990), and sometimes even apply for

a surgical intervention (sympathicotomy; e.g., Drott et al., 1998; Telaranta, 1998) to get rid of the possibility to blush altogether.

APPENDIX A

Mishap:

It is Friday afternoon; together with a friend you are chatting in a pub. You sit at the bar when somebody else orders four glasses of red wine. When this person turns around with the glasses on a tray, one glass falls off and a considerable splash of wine lands on your light colored pants. You look up to this person; this person starts blushing deeply.

[Het is vrijdagmiddag; je zit samen met een vriendin in de kroeg. Jullie zitten aan de bar, wanneer een andere klant 4 rode wijn en een spa bestelt. Op het moment dat die persoon zich omdraait met de hele bestelling op een dienblad, valt een van de glazen rode wijn om; een flinke scheut wijn belandt daardoor op je lichte broek. Je kijkt om naar die persoon; die persoon begint enorm te blozen.]

Ambiguous:

You live in a student's house. There is a schedule for cleaning the toilets and bathrooms. While you have breakfast together with Merel, Marloes (one of the co-tenants) asks whether one of you would be willing to take over her turn to clean tomorrow, because tomorrow is her boyfriend's birthday. As he is living in the far north of the Netherlands she would like to take the train very early tomorrow morning. Because of the special occasion, Merel immediately agrees to take over Marloes' turn of cleaning. While Merel is cleaning the bathrooms the next day, you decide to go to the city to do some shopping. Walking on the "Groote Staat" you run into Marloes. When you accost her, Marloes starts blushing deeply.

[Je woont in een studentenhuus en jullie hebben een poetsrooster voor wc en doucheruimte. Terwijl je samen met Merel in de keuken zit te ontbijten vraagt Marloes, een van de andere medebewoonsters, of een van jullie haar poetsbeurt van morgen zou willen overnemen omdat ze vanwege de verjaardag van haar vriend die in Nijmegen woont, de volgende ochtend in alle vroegte met de trein wil vertrekken. Vanwege de bijzondere aanleiding stemt Merel gelijk in om haar beurt over te nemen. Terwijl Merel de dag erop tussen de middag de wc en doucheruimte aan het poetsen is, besluit jij nog even wat boodschappen te gaan doen in de stad. Op de Groote Staat zie je ineens Marloes vlak voor je lopen. Je versnelt je pas en spreekt haar aan. Marloes begint enorm te blozen.]

Moral Transgression:

You have put up your bicycle in a cycle rack near the railway station. When you return to pick up your bike, someone else is trying to release her bike which is

put right next to yours. Because of the pronounced handlebars she does not immediately succeed in releasing her bike. She bashes her bike a few times and kicks hard on the chain guard of your bicycle. You accost this person. The person starts blushing deeply.

[Je hebt je fiets in de rekken bij het station geparkeerd. Als je terugkomt om je fiets op te halen zie je dat er net iemand bezig is om haar fiets in het rek naast de jouwe te krijgen. Vanwege het uitstekende stuur van haar fiets komt zij er niet tussen. Ze hengt haar fiets een paar keer heen en weer en geeft een harde trap tegen de kettingkast van jouw fiets. Je spreekt de persoon aan. De persoon begint enorm te blozen.]

Other Themes

In the following the themes that were used in the remaining three vignettes (for each category).

Mishap:

2. Another person bumps into you when you open the door to leave the “Christmas market” (data acquisition took place just before December 25); as a result your bag with Christmas balls falls on the floor; you hear that at least some of them crashed etc.
3. Someone runs into your dinner tray, when you were looking for a table in the refectory.
4. Someone spills coffee on your trousers while pouring out coffee from a thermos jug in a crowded train compartment.

Ambiguous:

2. Before entering the library you posit your bag near the dozens of other bags that were already left by some other students. When you are about to leave the library, you see someone else walking away with your bag in his hand.
3. When you visited a friend she proposed to go to the movies. After the film was finished, you decided to have a drink together in the bar. When you walk to the bar you see your boyfriend chatting cozily with another girl.
4. You are playing cards with a large group of friends in a bar. The agreement is that the loser must pay for all consumptions. During the final stroke you lead king of clubs, anticipating that this would be the winning trick, because you think that all clubs are already out of the game. Yet, the actor puts down a 10 of clubs and wins the game.

Transgression:

2. You are queuing in a long and very slow row in the supermarket when you see a person shoving himself in the row just before the cash desk.

3. On the way home you see a dog kept on a leash by the owner. The dog stops having a shit exactly in front of your door. The owner takes a short look and continues his walk.

4. You are making copies in the library. Someone is queuing for the same machine. When you're finished, you grab your articles and books. Just when you arrived at the door, you hear that the machine starts beeping (in our library the machine starts beeping after a while when you forget to take out your copy card). You turn around and see that the person who was waiting for his turn, was just making ready for using your card.

APPENDIX B

Nonintentional:

Buried in thoughts, the person entered the train without stamping the ticket. Even before the train reached the next station, the ticket collector asked for the tickets. The person handed the ticket over to the collector. The collector draws the person's attention to the fact that the ticket is not stamped and thus not valid.

[In gedachten verzonken stapt de persoon de trein in zonder het treinkaartje af te stempelen. Nog voor dat de trein het eerstvolgende station is binnengereeden vraagt de conducteur om het plaatsbewijs. De conducteur merkt op dat het kaartje niet is afgestempeld en dus ongeldig is. De conducteur spreekt de persoon aan.]

Ambiguous:

You are in the train heading for Eindhoven. Even before the train reached the next station, the ticket collector asked for the tickets. The person opposite to you handed the ticket over to the collector. The collector draws the person's attention to the fact that the ticket is not stamped and thus not valid.

[Je zit in de trein naar Eindhoven. Nog voor dat de trein het eerstvolgende station is binnengereeden vraagt de conducteur om de plaatsbewijzen. De persoon tegenover u laat het treinkaartje zien aan de conducteur. De conducteur merkt op dat het kaartje niet is afgestempeld en dus ongeldig is. De conducteur spreekt de persoon aan.]

Intentional:

The person is aware of the fact that the train tickets are almost never inspected on the route to Eindhoven. Without stamping the ticket the person entered the train. Even before the train reached the next station, the ticket collector asked for the tickets. The person handed the ticket over to the collector. The collector draws the person's attention to the fact that the ticket is not stamped and thus not valid.

[De persoon weet dat er op het traject naar Eindhoven vrijwel nooit wordt gecontroleerd. Zonder het treinkaartje af te stempelen stapt de persoon de trein in. Nog

voor dat de trein het eerstvolgende station is binnengereden vraagt de conducteur om de plaatsbewijzen. De persoon laat het treinkaartje zien aan de conducteur. De conducteur merkt op dat het kaartje niet is afgestempeld en dus ongeldig is. De conducteur spreekt de persoon aan.]

Other Themes

A person shift his car into reverse to leave his parking lot in the parking garage. While doing so, the person damaged the mirror of the car that was parked next to the actor's car.

A person leaves a large shop. When she walks through the doors, a security guard stops her and looks in her bag. The guard draws her attention to an article from which the magnet-button was not yet dislodged.

During the exam it was allowed to keep the handbook of Roman Law at hand, provided that there were no written notes in the book. The supervisor sees that the actor has a sheet with notes in the actor's handbook

A group of friends is playing cards in a bar. The agreement is that the loser must pay for all consumptions. During the final stroke a person leads king of clubs, anticipating that this would be the winning trick, because he thinks that all clubs are already out of the game. Yet, the actor puts down a 10 of clubs and wins the game.

When completing his monthly declaration form pertaining to his travel expenses for his job, the person ignores the fact that there was a considerable number of free days during this month.

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